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FLIGHT RESEARCH CENTER, EDWARDS, CALIFORNIA (EIS)

National Aeronautics and Space Administration  
Washington, D. C.

18 August 1971

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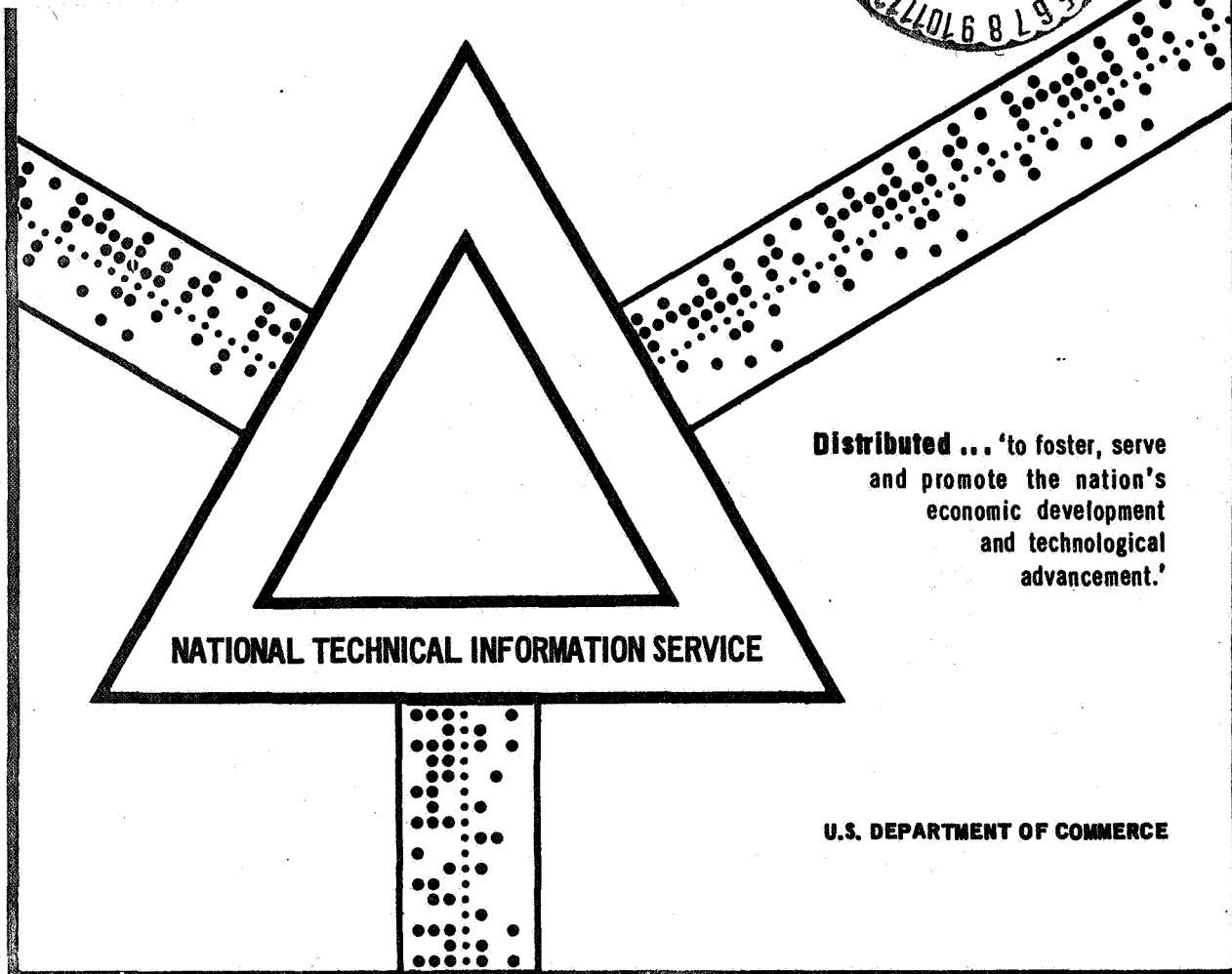
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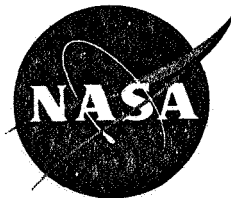
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**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION**  
**FLIGHT RESEARCH CENTER**  
**EDWARDS, CALIFORNIA**

**ENVIRONMENTAL IMPACT STATEMENT**



**FINAL**

**JUNE, 1971**

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
WASHINGTON, D.C. 20546

PB 202 054 -F

AUG 17 1971

OFFICE OF THE ADMINISTRATOR

Honorable Russell E. Train  
Chairman  
Council on Environmental Quality  
Washington, DC 20500

Dear Mr. Train:

In accordance with the Council on Environmental Quality Guidelines of April 23, 1971 and as the official responsible for the NASA environmental statements, I am transmitting, under separate cover, ten copies each of the following final NASA statements:

1. Ames Research Center, Moffett Field, California 567
2. Flight Research Center, Edwards, California 568
3. Langley Research Center, Hampton, Virginia 569
4. Lewis Research Center, Cleveland, Ohio 570

Copies of these final statements are also being made available to the Office of Management and Budget. Notice of the availability of these statements to state and local agencies and members of the public is being filed in the Federal Register.

Sincerely,

Homer E. Newell  
Associate Administrator

Separate Cover:

Ames Research Center Environmental Impact Statement	- 10 cys
Flight Research Center Environmental Impact Statement	- 10 cys
Langley Research Center Environmental Impact Statement	- 10 cys
Lewis Research Center Environmental Impact Statement	- 10 cys

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## SUMMARY

### FINAL ENVIRONMENTAL IMPACT STATEMENT

Flight Research Center

National Aeronautics and Space Administration

Edwards, California

1. This statement pertains to an Administrative Action.
2. This is an institutional environmental impact statement relating to the overall operation of the NASA, Flight Research Center. The Center is located in Kern County, California, approximately 100 miles northeast of Los Angeles. The Flight Research Center concentrates on aerospace and aeronautical research involving utilization of aircraft and experimental aerospace vehicles in actual flight. Flight activities relate primarily to areas in the vicinity of Los Angeles, Kern, Inyo and San Bernardino counties in Southern California; and to areas in Southern Nevada (principally Nye and Clark counties).
3. Operations of the Flight Research Center have a very negligible impact on the environment; and they are planned and controlled to eliminate or minimize effects on water, air and noise.
4. No alternatives to the Center operation are contemplated.
5. Copies of this impact statement have been submitted to other federal, state and local agencies.
6. A draft of this statement was published February 1971. This final statement was published and distributed in June 1971.

ENVIRONMENTAL IMPACT STATEMENT  
NASA, FLIGHT RESEARCH CENTER  
EDWARDS, CALIFORNIA

I. MISSION AND FACILITY DESCRIPTION:

The NASA Flight Research Center conducts aeronautical and space related research utilizing a wide variety of aircraft and aerospace vehicles. The Center's activities include flight research of advanced control concepts, aerospace vehicle handling qualities and flight loads; research on piloting problems and biomedical aspects of low-speed and high performance aircraft; investigations into the problems of takeoff, landing, aircraft noise, low-speed flight, supersonic and hypersonic flight and aerospace vehicle re-entry to verify predicted flight characteristics and to identify and explore unpredicted phenomena encountered in flight; and the development of flight testing and inflight simulation techniques.

The major thrust of the Center research effort involves the utilization of aircraft and aerospace research vehicles for investigations in actual flight. Some of the current and projected activities include aeronautical projects concerning general aviation, subsonic, supersonic and hypersonic flight research relating to both civil and military aviation applications; space vehicle flight systems projects to investigate flight behavior of advanced re-entry vehicles such as the M2-F3, HL-10 and X-24A heavy weight lifting bodies; and electronic flight systems research and development projects relating to display, guidance and control in advanced flight missions and improvements on systems and sensors used in biomedical monitoring, flight data acquisition and flight tracking.

The Center is located in the Mojave Desert approximately 100 miles northeast of Los Angeles, California. It is situated at the north end of the Edwards Air Force Base on a 218 acre site used under a permit from the Department of Air Force. Attachment A shows the location of the Center with relation to populated communities. It should be noted that Edwards Air Force Base is comprised of over 300,000 acres which affords the Center a considerable degree of isolation.

The major technical facilities of the Center include (1) an office-laboratory building equipped to provide laboratory functions necessary to support Center flight research programs such as flight simulation facilities, control systems display laboratory, a biomedical programs laboratory, digital and analog computer complex, and a flight control center; (2) a flight maintenance hangar equipped to maintain about twenty aerospace research vehicles and supporting aircraft; (3) a limited aircraft engine run-up area; (4) a modification hangar equipped to fabricate, assemble or modify flight vehicles; (5) a high temperature loads calibration laboratory (heat-loads facility) that provides for simulation research of thermal and flight loads on full-size supersonic and hypersonic vehicles and vehicle components; (6) a two-station high precision radar range providing radar tracking, communications and telemetered real-time data links; and (7) a run-way noise acquisition system for the investigation of noise produced by advanced aircraft during take off and landing operations.

## II. PROBABLE TOTAL IMPACT OF CENTER OPERATIONS ON THE ENVIRONMENT:

Overall operations at the Flight Research Center have no significant adverse effect on the environment. All indications are that this will continue for the future.

Within the Center, environmental health and pollution control activities are officially established functions integrated into planning and accomplishment of the Center mission. For example, all site selections and proposed research projects are subject to official reviews and approvals, which among other factors, must include specific consideration of safety, health, environment and similar matters. Additionally, the Center operates a continuing program of safety inspections and environmental health inspections that cover virtually all activities, organizations and facilities within the jurisdiction of the Center.

The Center has no industrial or laboratory functions that produce any significant potential wastes or pollutants to the air, water or life systems. Through a support service agreement with the Air Force, sewage disposal is accomplished by the Edwards Air Force Base through a modern system of underground sewage lines, lift stations and sewage ejection pits to a sewage treatment plant. The sewage treatment plant, operated by the Air Force has a 2.5 million gallon daily capacity and operates at average daily level approximately at .25 to .30 million gallons below capacity. Air Force officials estimate that current capacities will meet all known requirements for the immediate future. Their long range planning is geared to meet requirements for further expansion as required.

Waste run-off at the Center is negligible; however, an underground waste drain system exists in which any spillage or run-off is transferred from shops or hangars to a spill pond. Further transfer is not required and materials entering the spill pond are very satisfactorily disposed of by natural evaporation. It is evident that the Center work is essentially "clean" in that desert birds and migrating fowls regularly utilize the spill pond with no ill effects whatsoever.

In this desert locale there are no lakes, rivers or streams. Desert wildlife is abundant; and the Center activities impose no apparent interference or adverse influence on the balance of nature in the area.

Solid waste and garbage disposal for the Center is also accomplished through an inter-agency agreement by the Air Force. This involves the utilization of truck operated, containerized garbage collections on a scheduled basis, with deposits being made to an Air Force operated land-fill garbage disposal facility. Similarly, the Air Force provides a service to the Center to collect and dispose of industrial chemicals, oils, jet fuel and similar toxic wastes. All of this work is accomplished under the direction and control of the Edwards Air Force Base Military Public Health Officials who exercise continuing surveillance.



All Center boiler plants are fired with natural gas. Also, Center standby electric power facilities have been changed from diesel powered units to natural gas fired power units.

### III. ADVERSE ENVIRONMENTAL EFFECTS:

As indicated above, the Center has no significant environmental problem. This is particularly true in relation to communities, population concentrations or the public in general. Also, it does not appear that the Center programs will have any significant adverse influence on future population increases, distributions or concentrations. Some of the chief factors serving to minimize the pollution impact of our Center activities are: (1) the isolation that has been achieved by locating the Center within the boundaries of the Edwards Air Force Base which is, in turn, located in a remote and sparsely populated area of the Mojave Desert, (2) the vast air space that is available to the Center through the Defense Department and the Department of Transportation for the conduct of flight research operations, which extends north and east over other remote desert and mountain regions of California and Nevada, and (3) carefully planned flight corridors at altitudes and over geographic areas that successfully avoid populated communities.

Within the Center noise levels from aircraft jet and rocket engine ground-run operations have become a matter of concern. In the past, ground engine-run operations have been accomplished at engine run-up areas at the Center and on the Edwards Air Force Base flight line. However, with the advent of high thrust engines (e. g. 20,000-40,000-50,000 lb. thrust), such technical developments as high by-pass turbofans (rated up to 47,000 lb. thrust), and an increasing compaction of hangars, shops and industrial facilities along the flight line, safe and permissible noise exposures are being exceeded. Current programs involving such aircraft as the YF-12 (a multiple-engine aircraft with approximately 32,500 lb. thrust per engine) and future programs involving similar high performance vehicles dictate that steps be taken to develop a facility that will protect personnel from destructive noise levels and vibrations.

Recognizing this need, the Center has conducted preliminary investigations into various alternative approaches to overcome the noise hazard. We have now proposed to NASA Headquarters the construction of a Noise Suppression and Remote Test Facility that will meet our long term program requirements. This proposed facility will include an aircraft run-up area with tie-down and restraint fixtures capable of accommodating a wide variety of high thrust aircraft and flight research vehicles. It will have sound attenuation structures and fixtures designed to reflect or suppress engine noise and vibration. Location of the facility will be away from Center laboratories, hangars and shops at a distance sufficient to overcome any hazardous noise problems. Completion of this facility will resolve the local ground noise problem.

IV. ALTERNATIVES TO THE CENTER'S CONTINUED ACTION AND OPERATIONS:

The NASA Flight Research Center is a highly unique operation; and is the Nation's only major facility devoted exclusively to an aeronautical research, evaluation and proof-of-concept effort involving actual aircraft operations. In view of this, and in the light of the negligible adverse impact on the environment discussed above, no alternatives to this operation are contemplated.

V. RELATIONSHIP BETWEEN LOCAL SHORT TERM USE OF THE ENVIRONMENT AND THE ENHANCEMENT OF FUTURE PRODUCTIVITY AND ENVIRONMENT:

A primary goal in the Flight Research Center mission is to establish safer and more efficient manned flight. Since its inception, the Center has been eminently successful in achieving major gains towards this goal. It is fully anticipated that through the local short term use of the environment in the actual utilization and flight of advanced aeronautical and aerospace vehicles this Center's program activity will continue to enhance man's productivity through increased effectiveness in flight as a major means of transportation and as a tool in modern technology.

Similarly, Center interest also concentrates on the possible impact of aircraft operations on the environment. Present and future investigations will enhance environment as a result of studies to measure and evaluate near and far field acoustic data associated with aircraft operations. This includes studies of engine noise during take off and landing and its effects on both the aircraft and the surroundings; and effects of boundary layer noise at various flight conditions. Such studies are aimed at correlating the acoustic data with prediction techniques to aid in the control of noise and vibration for present and future aerospace vehicles.

VI. IRREVERSIBLE/IRRETRIEVABLE COMMITMENTS OF  
NATURAL RESOURCES:

No depletion of natural resources results from this Center's operations.

VII. LIAISON WITH OTHER FEDERAL, STATE, AND LOCAL  
AGENCIES AND PRIVATE ORGANIZATIONS:

Copies of this Environmental Impact Statement have been submitted to the following State and Local Agencies:

STATE CLEARINGHOUSES

Office of the Lieutenant Governor  
Office of Intergovernmental Management  
State Capitol  
Sacramento, California 95814

Chief, Budget Division  
Department of Administration  
Carson City, Nevada 89701

### METROPOLITAN CLEARINGHOUSES

Southern California Association of Governments  
Suite 801, 606 South Hill Street  
Los Angeles, California 90014

Kern County Regional Planning Advisory Commission  
1103 Golden State Highway  
Bakersfield, California 93301

### OTHER ORGANIZATIONS

Four County Development Committee  
Benjamin G. Oman, Secretary/Treasurer  
44812 North Elm Avenue  
Lancaster, California 93534  
(805) 942-9581